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# **AN APPRAISAL OF THE BOMBING OF**

## **NORTH VIETNAM**

**(1 JAN - 31 MAR 68)**

**S-3060/AP-4A**



Prepared Jointly by  
The Central Intelligence Agency  
and  
The Defense Intelligence Agency



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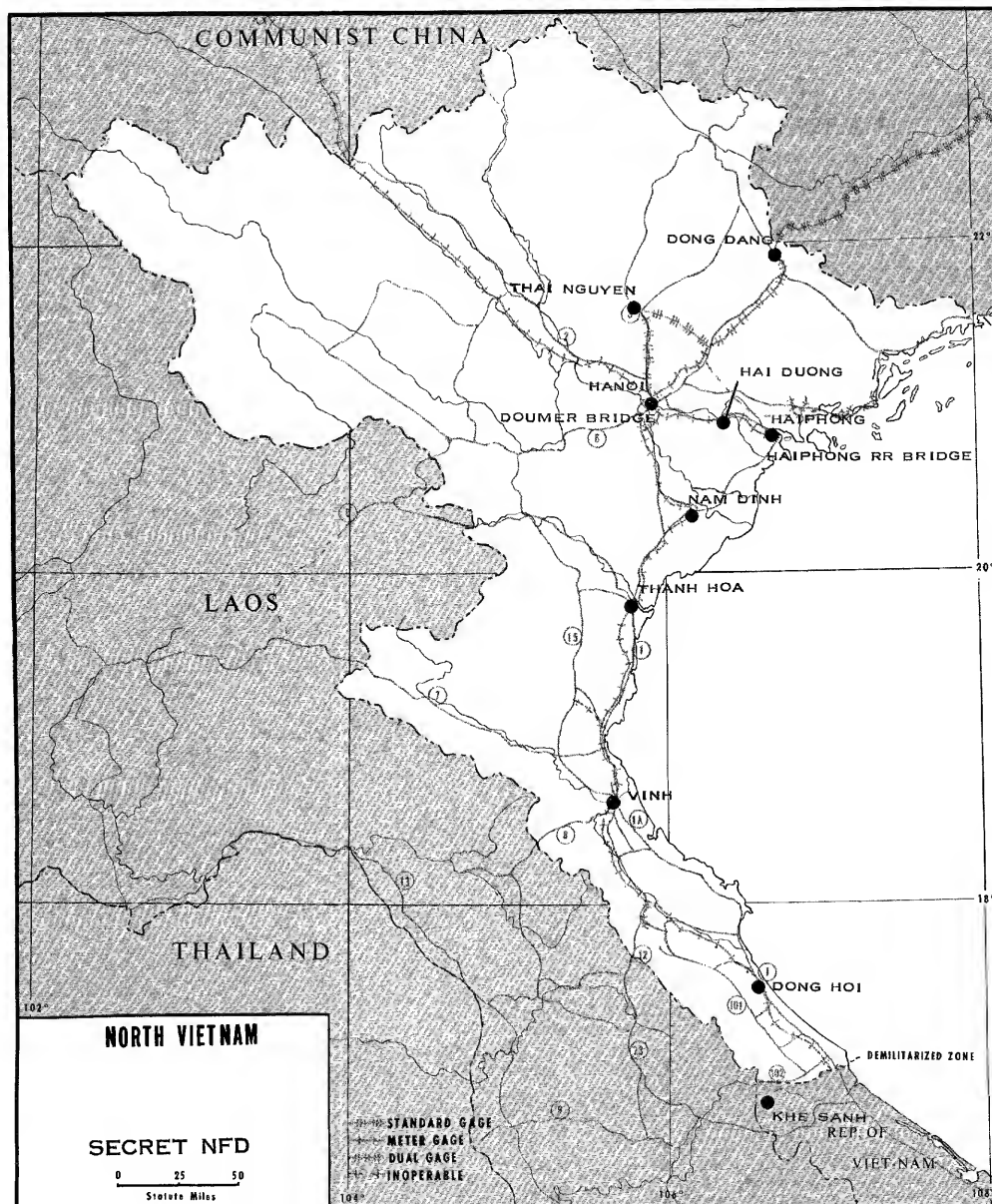
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**FOREWORD**

This report is prepared at the request of the Secretary of Defense for an evaluation of certain effects of the ROLLING THUNDER program. The report covers three general areas of concern; Effects on Military Targets; Leadership and Public Reactions; and Effects on the NVN Economy. The discussion of political effects is limited to those developments within North Vietnam which relate to Hanoi's attitude toward continuing the war and the effects the ROLLING THUNDER attack has on civilian morale in North Vietnam.

**THIS REPORT WILL HENCEFORTH BE  
PREPARED ON A QUARTERLY BASIS.**

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An Appraisal of the Bombing of North Vietnam  
January-March 1968

SUMMARY

1. (S/NFD) President Johnson's speech of 31 March restricting the ROLLING THUNDER program to operations south of the 20th parallel was the most significant development during the first quarter of 1968. During the three months preceding the Presidential announcement, a combination of bad weather, operational restrictions and diversion of sorties to the Khe Sanh area limited the ROLLING THUNDER effort. The level of air activity was at its lowest point since the first quarter of 1966. Only 14,700 attack sorties were flown against targets during the quarter, compared with a quarterly average of 26,700 sorties in 1967 and 20,300 in 1966 (see graph, Tab B). Primary emphasis was against lines of communications south of Thanh Hoa, where about 75 per cent of all attack sorties were flown.

2. (S/NFD) The capability of the transport system probably improved during the period although key bridges in the Hanoi and Haiphong areas remained interdicted. Major rail and road construction continued in all regions of North Vietnam. Motor vehicle activity throughout the southern Panhandle area was at a high level. Pilot reports of trucks destroyed or damaged were at levels approximately twice that of the last quarter of 1967. Damage to railroad rolling stock and watercraft, however, was approximately 50 per cent less than that achieved during the preceding period.

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3. (S/NFD) Air defense activity was also at low levels compared with the previous period. Antiaircraft artillery continues to be the most effective defense weapon. SAM deployment south to the DMZ area continued to be noted during the period indicating Hanoi's intent to maintain and increase its threat to US aircraft in the south.

4. (S/NFD) North Vietnam's industry has suffered little additional damage since the end of 1967. Sixty to 70 per cent of the total electric generating capacity is estimated out of operation at the end of the quarter. The record level of goods being imported through Haiphong Port during the quarter added considerably to ship congestion although priority cargoes such as food and petroleum were discharged quickly.

5. (S/NFD) The measurable value of damage inflicted during the quarter totaled \$18.0 million, significantly below the quarterly averages for the previous two years of the bombing program. Cumulative value of damage is estimated at \$436 million. In addition to these measurable losses there continue to be many other losses which cannot be assigned meaningful values. The air strikes have degraded North Vietnam capability for sustained large-scale military operations in South Vietnam. Nevertheless, increased levels of combat and stepped-up infiltration of men and supplies during the first quarter demonstrate that North Vietnam retains the capability to support military activities in the South at increased levels of combat.

Effects on Military Targets

1. (S/NFD) Adverse weather conditions in the north, restrictions on bombing, and the diversion of aircraft to the Khe Sanh area limited air activity against North Vietnam during the first quarter of 1968. The total of 14,700 attack sorties flown during the period was the lowest since the first quarter of 1966 when the bombing was suspended for nearly a full month. Most of the effort was directed against lines of communication, primarily in the Panhandle, although several targets were attacked for the first time including the Hanoi Port facilities and the Hanoi Radio station. Airfields, industrial facilities, SAM and AAA sites, storage areas, and artillery positions and troop concentrations in and near DMZ were also attacked. Nearly all attacks in the northeast had to be accomplished using radar bombing systems, and definitive bomb damage assessments were severely limited.

2. (S/NFD) The Hanoi Railroad/Highway (Dumer) Bridge over the Red River, interdicted in December 1967, remained out of service throughout the quarter and continued to prevent through rail service to Hanoi from Haiphong, Dong Dang, and other northern points. The movement of goods through Hanoi continues, however, via 13 highway bypasses and a rail ferry all within 12 miles of the original bridge. A new combination rail bridge/barge crossing was observed under construction just south of the rail ferry in photography of mid-March.

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The Hanoi Railroad/Highway Bridge over the Canal des Rapides was damaged in February but rail traffic apparently was not significantly curtailed as a train was observed crossing the bridge three days later.

3. (S/NFD) Damage to the Haiphong Railroad/Highway Bridge, interdicted in September 1967, prohibited through rail service to and from the port throughout the quarter. In early January, some movement of rail cars to and from the port area was resumed by means of a rail pontoon bypass bridge. Although the original bridge has had a span missing throughout the quarter, photography revealed that a truss section mounted on a rail car could have been emplaced at night. The three highway bridges in Haiphong are interdicted, but at least 10 highway ferries or pontoon bridges and a cable bridge are available for the movement of goods from the port by truck. In addition, a new highway cable bridge is under construction south of the Haiphong Rail/Highway Bridge. A comparison of photography of 13 January and 4 March revealed a large reduction in the amount of cargo in open storage at the port.

4. (S/NFD) Attacks against the rail system decreased in comparison with the previous three month period. Nearly all the effort was against rail yards, sidings, and bridges on the Hanoi-Vinh line. Most of the system in the North was considered open for through service during the period with the only key interdictions being at the Doumer Bridge, the Haiphong Railroad/Highway Bridge, and the Hai Duong

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Railroad/Highway Bridge west of Haiphong. The line south from Hanoi was serviceable most of the time due to extensive repairs but movement below Thanh Hoa was limited. Damage levels to locomotives and rolling stock were on the order of those of the first quarter of 1967, but less than half the quarterly average for the entire year.

5. (S/NFD) Air strikes against heavy truck traffic in the Panhandle resulted in approximately twice as many trucks reported damaged or destroyed compared with the preceding quarter. Reported vehicle activity [REDACTED]

[REDACTED] increased over the previous quarter, reflecting increased supply requirements in support of the war in South Vietnam. During March day-time sightings of trucks increased dramatically over the levels of January and February. Reports of motor vehicle activity south of Thanh Hoa shows a relatively large and continuing flow of traffic passing through the Panhandle into Laos via highway Routes 7 and 15. Roadwatch reports from teams along Route 15 in the vicinity of the Mu Gia Pass indicate that the average number of trucks during the first quarter of 1968 was about twice the level of the previous quarter.

6. (S/NFD) Recent photography shows increasing concentrations of POL drums and POL tank trucks dispersed along highway Routes 1A, 15, and 151. Similar activity was noted further south on Route 101 and secondary roads in the DMZ area. The presence of at least 50 tank trucks in Nam Dinh and POL drums in large quantities may reflect

a shift of some POL supply and distribution facilities further south to support increased use of motor vehicles, construction equipment, and motorized watercraft.

7. (S/NFD) During the first quarter, photography revealed widespread road repair and construction activity in North Vietnam. Large amounts of heavy road construction equipment have been imported in recent months. A new road, Route 415, which will link the Ningming area of China with Haiphong was nearing completion by the end of January. Construction activity was observed during the quarter on Routes 19, 191, and 6 in the northwestern portion of the country. The improvement of these routes will provide a more direct motorable link between China and northern Laos through North Vietnam. A new all-weather road extending from the Dong Hoi area toward the southwestern corner of the DMZ was observed under construction in January. By March the route was under construction within two miles of the Laos border.

8. (S/NFD) Strikes against transshipment points and port facilities remained at about the same level as the last quarter of 1967, but those against watercraft decreased by more than 50 per cent, compared with the last quarter of 1967. Damage and destruction of watercraft decreased by a similar factor. During the period, about 50 transshipment points were attacked including an initial strike on the Hanoi port facility which handles 30 per cent of all inland water traffic.

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9. (S/NFD) North Vietnamese air defense activity was generally low throughout the quarter as a result of reduced United States strike activity in the key target areas in the northeast. Antiaircraft artillery and small arms fire still remained the most effective weapon against strike aircraft accounting for approximately 25 US losses, less than half the comparable losses suffered in the last quarter of 1967. Enemy fighter operations were credited with destroying nine US aircraft during the period compared with 11 in the preceding quarter. Analysis of enemy fighter tactics continues to reflect selective reaction by the North Vietnamese, with the MIG-21 conducting the most aggressive patrols and ranging farther from the Hanoi area. The enemy persists in maintaining a small operational capability in North Vietnam even though all of the airfields except Hanoi/Gia Lam were struck on several occasions. Eight MIG aircraft were shot down during the quarter. Reports continue to indicate that the vulnerability of enemy fighter aircraft to bombing attack is being reduced by using MI-6/HOOK helicopters to disperse the aircraft from the airfields and later to return them for operations.

10. (S/NFD) SAM missile activity was lower than any quarter during 1967. Approximately 400 missile firings were noted, compared with 600 during the first quarter, and nearly 1,200 in the last quarter of 1967. Eight US aircraft were lost to SAM's. This approximates the fire-to-kill ratios previously established. The reduction in SAM

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firings is due in part to the reduced flight activity in the areas of heavy SAM defenses -- attack sorties in the northern area were less than half the number of the previous quarter -- and may also reflect a tighter discipline in weapons release. Of significance is the continued SAM activity in the Panhandle from Thanh Hoa south to the DMZ. January photography revealed a cluster of four SAM sites near Thanh Hoa, two of which were occupied. [REDACTED] at least two elements active near Vinh, and an additional element near the DMZ fired four missiles at B-52's. Twenty new SAM sites were detected during the period, seven in the vicinity of the DMZ.

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Leadership and Public Reactions

11. (S/NFD) The North Vietnamese leadership in the past several months has mounted its most intensive campaign to date to get the bombings stopped. Since Foreign Minister Trinh's 29 December "will talk" offer, the regime has made a concerted effort to win support for its position and to increase international pressure on the US to end the air attacks. Since the first of the year, the North Vietnamese have contacted governments in Western Europe, Africa and the Middle East to press their case. Hanoi's unprecedented move in mid-February of releasing three US pilots probably was intended as a sign of their good will.

12. (S/NFD) These efforts culminated in a rapid North Vietnamese response to President Johnson's speech of 31 March announcing a partial

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bombing halt. In a 3 April statement, Hanoi agreed to make contact with a US representative, "to determine the unconditional cessation of US bombing raids and all other acts of war against the DRV so that talks may start." Regime statements indicate that proposed "contacts" with the US will deal primarily with achieving an end to all acts of aggression against North Vietnam, but could also include a discussion of date, place and level of "formal talks" after the bombing halt is agreed.

13. (S/NFD) Popular morale in North Vietnam apparently has not deteriorated significantly. The hardships and shortages caused by the bombings, and by the entire war effort have probably developed some fatalism among the populace but the regime's control apparatus seems more than adequate to quell any overt anti-regime sentiment. Recent publication of a decree formulated last fall aimed at "counter-revolutionaries" and a series of articles in the press stressing the need for more intensive public security suggests that popular disaffection may be of increasing concern. The announcement of the limited bombing halt brought an air of relief to Hanoi; however, official propaganda has cautioned the populace against counting on an early end to the war and has endeavored to prepare them for greater hardships ahead.

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shortages of consumer goods and most foodstuffs continue, but the problem is well within manageable limits. The rice ration, at least in Hanoi, is being maintained at the usual level, and [REDACTED]

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[REDACTED] rice has been a little more plentiful.

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Effects on the Economy

15. (S/NFD) North Vietnam's industry has remained basically unchanged since the end of 1967. Most of the larger electric power and manufacturing facilities continue either to be inoperative or to operate at a fraction of their prestrike capacity. There are, however, tentative signs that some improvement may be achieved in the near future. Industrial targets struck during the first quarter of 1968 include seven power plants, the Thai Nguyen Iron and Steel Plant, and six small manufacturing plants. More than 50 strikes were carried out against these targets but most of the strikes involved single aircraft using radar bombing techniques.

16. (S/NFD) Repair work was first noted in mid-March at the Haiphong Cement Plant and the adjacent Haiphong West Power Plant, both of which had been heavily damaged in April 1967. Until March it had appeared that restoration of heavily damaged industrial facilities such as these would be postponed as long as bombing continued. The repair effort on these two plants, however, suggests that similar work may be under way elsewhere.

17. (S/NFD) At the end of March the electric power industry was

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essentially the same as at the end of 1967. Total generating capacity out of service at the end of March is estimated to have been between 115,000 and 130,000 KW, or 60 to 70 percent of national installed capacity, compared with a peak of 80 per cent out of service from June through October 1967. Of the 13 power plants previously damaged, three are in partial operation, five are not in service, and the status of five plants is uncertain. Progress in repairing the Hanoi power plant increased its capability since the first of the year from 50 per cent to an estimated 75 per cent of the plant's installed capacity. Construction of a blast wall surrounding the main power plant building to the roofline is nearly complete. The North Vietnamese continue efforts to keep the main power network functioning by rerouting transmission lines and by relocating transformers in revetted, dispersed positions. Power supply in Hanoi and Haiphong still is characterized by rationing and frequent outages.

18. (S/NFD) An unprecedented announcement by the regime on 15 March heralded the presentation of 50,000 metric tons of rice, 10 million meters of textiles and 100 tons of medical supplies to the National Liberation Front of South Vietnam. No reference was made to the timing of deliveries, but the presentation was made allegedly to alleviate hardships resulting from the Allied reaction to the Tet offensive. Both rice and textiles are imported and are tightly rationed in the North. The rice donation is equivalent to

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the annual North Vietnamese ration for approximately 300,000 persons and the textile donation is equal to the annual ration of two and a half million persons.

19. (S/NFD) Identified seaborne imports during the quarter amounted to 458,000 metric tons, the highest quarterly total since the bombing started in 1965. Imports of both petroleum and miscellaneous and general cargoes reached record highs. The record level of petroleum imports -- 105,000 metric tons -- is believed to be in response to the increased truck and watercraft traffic observed throughout the country. Despite an increase in estimated consumption to 30,000 tons a month, stocks on hand at the end of March were equal to about 80 days of supply. An estimated 25,000 tons of petroleum from the Soviet Far East are believed to be available in storage in South China.

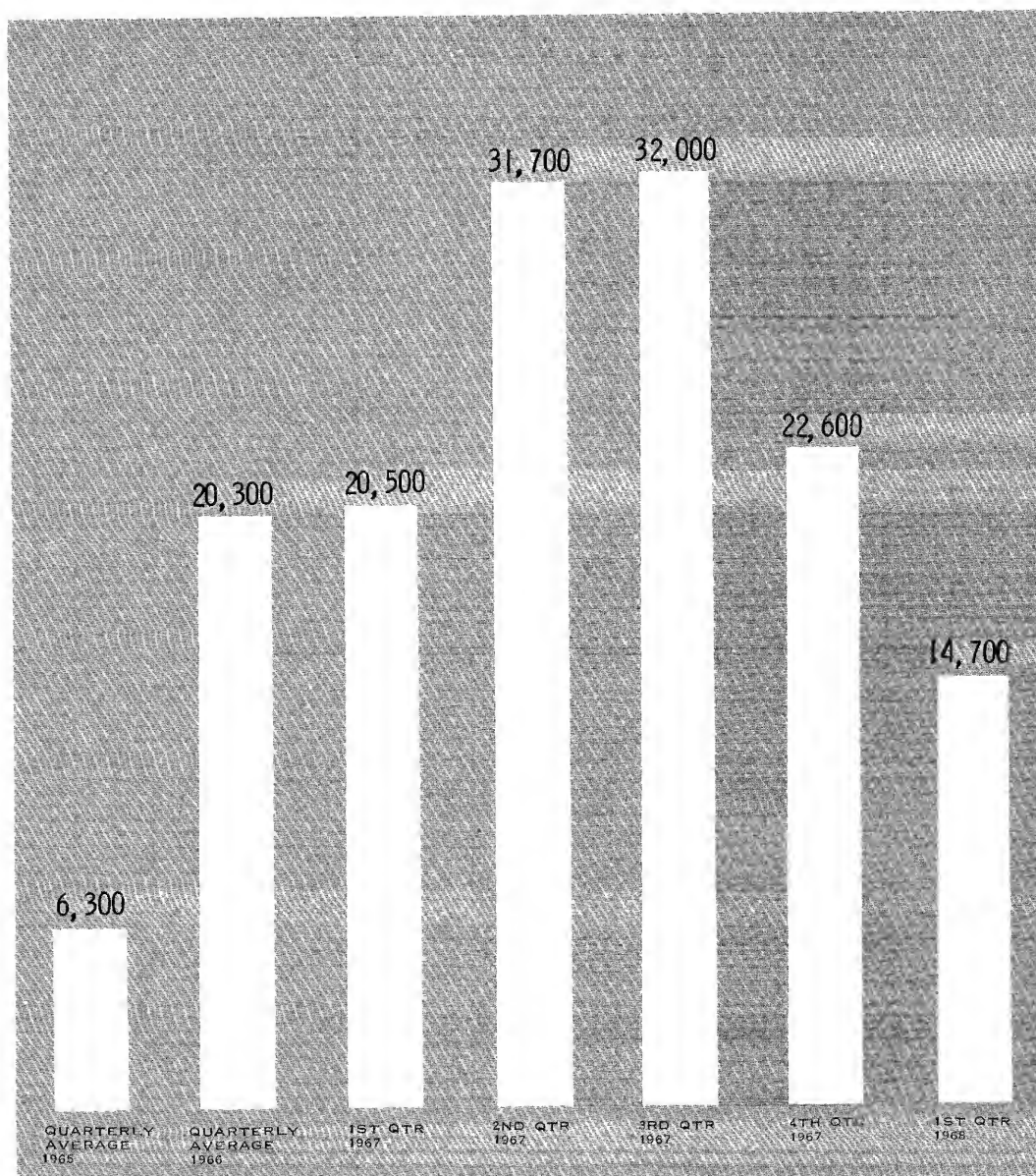
20. (S/NFD) Seaborne exports totaled 146,000 metric tons during the quarter. This amount is almost 50 per cent lower than exports during the first quarter of 1967, but substantially higher than the 88,000 tons exported during the fourth quarter. The improvement is due almost entirely to the repair of the damaged coal processing facilities at Cam Pha.

21. (S/NFD) The increases in seaborne trade resulted in ship layover time at Haiphong increasing from an average of 15 days in January to 28 days in March. Priorities in discharging cargo were given to ships delivering foodstuffs and petroleum. The average discharge time for



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UNITED STATES ATTACK SORTIES AGAINST TARGETS IN NORTH VIETNAM,  
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small tankers was about four days during the quarter compared with nine days in 1967.

22. (S/NFD) Cumulative measurable damage attributable to the ROLLING THUNDER program through March 1968 is estimated at \$436 million. (see Tab A). Of this amount, \$18.0 million was inflicted during the first quarter, lower than the quarterly averages for the past two years and a continuation of the downward trend evident since the second quarter of 1967 when damage of \$80.6 million was inflicted. Damage to the economic sector amounted to \$12.6 million, primarily as a result of attacks against lines of communication and from losses arising from decreased exports. Damage to the military establishment was minimal during the quarter, accounting for only \$5.4 million. In addition to these measurable losses there continue to be many other losses to both the economy and the military establishment which cannot be assigned meaningful values.

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TAB A

Value of Economic and Military Damage  
Attributed to the ROLLING THUNDER Program  
1965 Through March 1968

<u>Economic</u>		<u>Military</u>	
<u>Direct Losses</u>	<u>Million US\$</u>	<u>Direct Losses</u>	<u>Million US\$</u>
Railroad/Highway Bridges	37.4 <u>a/b/</u>	Barracks	31.2 <u>a/</u>
Transportation Equipment	79.6	Ammunition Depots	5.3 <u>a/</u>
Electric Power Plants	33.1 <u>a/</u>	Motor Vehicle Depots and	
Petroleum	7.5	Supply Areas	11.0 <u>a/</u>
Manufacturing Facilities	18.1 <u>a/</u>	Airfields	1.9 <u>a/</u>
Railroad Yards and Shops	6.6 <u>a/</u>	Radar and Communications	
Maritime Ports and Shipyards	2.7 <u>a/</u>	Sites	2.9 <u>a/</u>
Miscellaneous Armed		SAM Sites	8.7 <u>a/</u>
Reconnaissance	2.4	Naval Bases	1.9
		Aircraft	47.6
SUBTOTAL, Direct Losses	187.4	Naval Craft	4.8
		Miscellaneous Armed	
<u>Indirect Losses</u>		Reconnaissance	21.0
Exports	39.9		
Agriculture <u>c/</u>	60.5	TOTAL, Direct Losses	136.3
Fishing	12.5		
		<u>TOTAL</u>	
SUBTOTAL, Indirect Losses	112.9	<u>Million US\$</u>	
		Economic	300
TOTAL, Direct & Indirect	300.3	Military	136
		TOTAL	436 <u>d/</u>

a/ Estimate is incomplete because of inadequate post-strike photography.

b/ Of the total, \$8.0 million is estimated to have been expended to date on the repair of damaged and destroyed bridges and \$29.4 million is estimated for complete restoration in the future of bridges damaged or destroyed. In addition, \$1.6 million would be required to make temporary repairs to presently unrepaired bridges.

c/ It should be noted that losses of agricultural crops are arbitrarily attributed entirely to the indirect effect of the bombing. An unknown part of these losses is in fact due to weather and other natural causes.

d/ Excluding the cost of trucks destroyed and damaged by US naval operations along the coast of southern North Vietnam.

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CINCUSAREUR	1
CINCUSAFE	1
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CIA	125
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